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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,459	05/11/2005	Hiroshi Kurakata	4918-0102PUS1	6940
2292	7590	11/23/2007		
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER THOMPSON RUMMEL, PONDER N	
			ART UNIT	PAPER NUMBER
			1795	
			NOTIFICATION DATE	DELIVERY MODE
			11/23/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

Application No.

10/534,459

Applicant(s)

KURAKATA, HIROSHI

Examiner

Ponder N. Thompson-Rummel

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/5/2007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

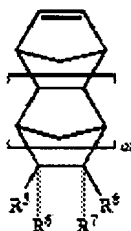
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jayaraman et al (US Patent 6,147,177) in view of Tsunogae et al (US 6,486,264).

With respect to claims 1-3, 5-6, 10-15, Jayaraman et al. discloses a transparent photoresist composition (column 2, lines 61-62 and column 3, lines 9 and 10) that is soluble in aqueous base and that can be used to create integrated circuit chip or circuit boards comprising (column 22, lines 1-4):

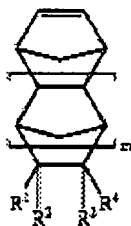
- A. a polycyclic monomer having an acid labile group, such as a carboxyl group, represented by formula (II) (column 6, lines 35-45)



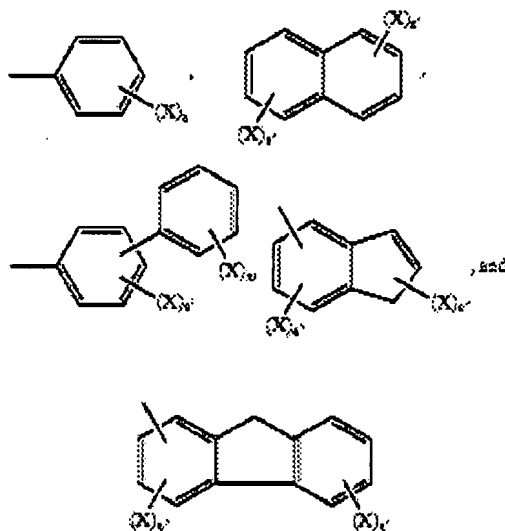
where at least one  $R^5$  to  $R^8$  preferably represents  $-(A)_nC(O)OR^*$ ,  $m$  is an integer from 0 to 5 (column 6, lines 55-57),  $n$  is an integer of 0 or 1,  $A$  represents a single covalent bond (when  $n = 0$ ) or a divalent group (column 7, lines 1-3),  $R^*$  represents  $-C(CH_3)_3$ ,  $CH(R^p)OCH_2CH_3$ ,  $-CH(R^p)OC(CH_3)_3$  or cyclic group wherein  $R^p$  represents a hydrogen or linear or branched alkyl group (column 8, line 6-30).

- B. an acid-generating agent (a photoacid generator - column 20, lines 44-52);
- C. a crosslinking agent such as methoxymethyl substituted melamine and cyclic urea compounds (column 20, lines 10-16);
- D. a solvent such as propylene glycol ethyl ether acetate, cyclohexanone, and ethyl lactate (column 21, lines 29-31).

Additionally, Jayaraman et al further discloses a monomer having a phenylamide group as represented by formula (I) that can be also used in combination with the monomer of formula (II) (column 17, lines 18-22),



wherein at least one of  $R^1$  to  $R^4$  must be selected from an aromatic ring containing substituents:  $-(CH_2)_nNHC(O)G$  and  $-C(O)NH(CH_2)_nG$ ,  $G$  is an aromatic group selected from the following moieties (column 3, lines 55-65 and column 4, lines 1-10)



wherein X represent  $OR^{14}$  or  $R^{15}$  (column 4, lines 11),  $a$ ,  $a'$  and  $a''$  represents the number of times substituent X is substituted on the ring system and  $a$  is an integer from 1 to 5,  $a'$  is an integer from 1 to 4 and  $a''$  is an integer from 1 to 3 (column 4, lines 20-24),  $m$  is an integer from 0–5, preferably 0 to 1 (column 3, line 50),  $n$  is an integer from 0 to 5 (column 3, lines 50-51),  $R^{14}$  is a hydrogen, linear or branched ( $C_1$  to  $C_{10}$ ) alkyl,  $-C(O)CH_3$ , tetrahydropyranyl, t-butyl and  $R^{15}$  is a hydrogen, cyano, halogen, and  $-C(O)O$ -t-butyl (column 4, lines 23-28).

The monomers are polymerized by ring-opening metathesis polymerization (ROMP) with subsequent hydrogenation (column 13, lines

10-14) in the presence of a catalyst that consists of a ruthenium metal carbene complex catalyst (lines 41-45).

Jayaraman et al. also discloses a method of forming an image by coating a substrate with film comprising the positive or negative photoresist of A-D (column 21, lines 26-33), imagewise exposing the film to radiation by electron beam xenon lamp, x-ray (ultraviolet) radiation (column 21, lines 37-45), and developing the pattern with an aqueous solution (for example, tetramethyl ammonium hydroxide) (column 21, lines 59-63). However, Jayaraman et al. fails to disclose the use of an organoruthenium compound in which a neutral electron donating ligand is coordinated wherein the neutral electron donating ligand is a heterocyclic carbene compound with a nitrogen atom.

Tsunogae et al discloses a process for producing hydrogenated ring-opening polymer in which an organoruthenium compound can be used as a polymerization catalyst. Further, the polymerization catalyst has a ligand that has a neutral charge (column 6, lines 35-40). Such neutral electron donor compound consists of heteroatom containing carbene compounds which are represented by formulas [5] and [6] (column 7, lines 22-40). Examples of polymerization catalyst that include ruthenium compounds having two heteroatom-containing carbene compounds coordinated thereto are bus (tricyclohexylphosphine) benzylidenruthenium dichloride, bis(triphenylphosphine)-3,3-diphenylpropenylideneruthenium

dichloride and bis(1,2-diisopropylidene)sol-2-ylidene)benzylideneruthenium dichloride (column 8, lines 48-54).

When the polymerization catalyst contains an organoruthenium compound and a heteroatom-containing carbene compound, the catalyst exhibits a higher activity for ring opening polymerization (column 2, lines 17-22) and provides a hydrogenation product with a high yield (column 2, lines 9-13). Also, when the catalyst is used after completion of the polymerization, the catalyst can be easily removed (column 2, lines 12-15). Therefore, it would have been obvious to one of ordinary skill within the art at the time of the invention to use a polymerization catalyst that contains an organoruthenium compound and a heteroatom-containing carbene as disclosed by Tsunogae et al. within the photoresist composition of Jayaraman et al to produce high yield of hydrogenated product and enhance activity for ring opening polymerization.

### ***Response to Arguments***

3. Applicant's arguments with respect to claim 1-3, 5, 6, 8-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ponder N. Thompson-Rummel whose telephone number is 571-272-9816. The examiner can normally be reached on Monday-Friday 7:00 am - 4:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PTR

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*Gyneth Kelly*